

Table B-1: Initial and Calibrated Environmental Input Parameters for the Arnot and Gobas Food Web Model

Environmental Parameters, Sediment, Site-Specific							
Component	Symbol	Initial Value ^a	Comments	Distribution	Calibrated Value ^b	Comments	Units
PCB Concentration ^c	C _s	95.4/365.4	Spatially weighted average	None	Area Specific	Identified as a sensitive input parameter in the final FWM	µg/kg
4,4'-DDE Concentration in Sediment ^c	C _s	3.48/4.72	Spatially weighted average	None	Area Specific	Identified as a sensitive input parameter in the final FWM	µg/kg
Sediment Organic Carbon ^c	C _{Sed}	0.018/0.02	Spatially weighted average	Normal µ=0.0171 σ=0.00028	0.017		fraction
Environmental Parameters, Surface Water, Site-Specific							
Total PCB Concentration ^c	C _{WT}	0.409	Round 2, Event 1, XAD data; Locations 5, 11 & 23			Identified as a sensitive input parameter in the final FWM	ng/L
4,4'-DDE Concentration ^c	C _{WT}	0.023	Round 2, Event 1, XAD data			Identified as a sensitive input parameter in the final FWM	ng/L
Total Organic Carbon ^c	χ _{TOC}	2E-06/2.1E-06	SP&S bridge/Midpoint Station 10801		0.017		kg/L
Total Dissolved Carbon ^c	χ _{DOC}	1.6E-06/1.7E-06	Derived from TOC	Normal µ=1.38E-6 σ=5.9E-8	1.3E-6		kg/L
Total Particulate Carbon ^c	χ _{POC}	4E-07	Derived from TOC and Arnot and Gobas (2004)				kg/L

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Mean Water Temperature ^c	T	13.4/13.7	SP&S bridge/Midpoint Station 10801	Normal $\mu=13.9$ $\delta= 1.7$	13.7	Identified as a sensitive input parameter in the final FWM	°C
Dissolved Oxygen ^c	C _{ox}	10.8/8.9	SP&S bridge/Midpoint Station 10801				mg/L
Suspended Solids ^c	C _{ss}	1.14E-05/0.078	SP&S bridge/Midpoint Station 10801	Normal $\mu=1.13E-5$ $\sigma=4.5E-6$	1.4E-5		kg/L
Biological Parameters, from Literature							
Fraction of diet, prey item <i>i</i>	P _{<i>i</i>}	Species Specific	Table 4		Table 4		unitless sum P ₁ to P _{<i>i</i>} = 1
Organism Weight	W _B	Species Specific	Table 4		Table 4		kg ww
Lipid Fraction	V _{LB}	Species Specific	Table 4		Table 4		kg lipid/kg organism
Lipid Fraction (phytoplankton)	V _{LP}	Species Specific	Table 4		Table 4		kg lipid/kg phytoplankton
NLOM Fraction	V _{NB}	Species Specific	Table 4		Table 4		kg NLOM/kg organism
NLOM Fraction (phytoplankton)	V _{NP}	Species Specific	Table 4		Table 4		kg NLOM/kg phytoplankton
Water Fraction	V _{WB}	Species Specific	Table 4		Table 4		kg water/kg phytoplankton
Fraction Overlying Water Ventilated	m _O	Species Specific	Table 4		Table 4		unitless m _O = 1 - m _P
Fraction Porewater Ventilated	m _P	Species Specific	Table 4		Table 4		unitless

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Scavenging Efficiency	σ	100	Used in feed rate calculations for filter feeders	None Defined	100		percent
Resistance to Chemical Uptake (aquatic phase)	A	6E-05	Great Lakes data; for algae, phytoplankton and macrophytes	None Defined	6E-05		day ⁻¹
Resistance to Chemical Uptake (organic phase)	B	5.5	Great Lakes data; for algae, phytoplankton and macrophytes	None Defined	5.5		day ⁻¹
Sorption capacity of NLOM compared to octanol	β	0.035		None Defined	0.035		unitless
Sorption capacity of NLOC compared to octanol	γ	0.35		None Defined	0.35		unitless
Dietary lipid absorption efficiency	ϵ_L	0.92/0.75/0.72	Fish/invertebrates/zooplankton		Table 3		fraction
Dietary NLOM absorption efficiency	ϵ_N	0.55/0.75/0.72	Fish/invertebrates/zooplankton		Table 3		fraction
Dietary transfer efficiency constant A	EDA			None Defined	3E-07		
Dietary transfer efficiency constant A	EDB			None Defined	2		
Environmental Parameters, from Literature, Other							
Density of OC in Sediment	δ_{OCs}	0.9					fraction
Disequilibrium factor for DOC Partitioning	D_{DOC}	1					unitless
Disequilibrium factor for POC Partitioning	D_{POC}	1					unitless

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Proportionality constant, phase partitioning of DOC compared to octanol.	α_{DOC}	0.028			Table 4		unitless
Proportionality constant, phase partitioning of POC compared to octanol.	α_{POC}	0.35					unitless
Chemical Parameters, from Literature^d							
Total PCB, octanol-water partition coefficient ^e	log K _{ow}	6.3			Table 4	Identified as a sensitive input parameter in the final FWM	unitless
Total PCB, Henry's law constant	H	43.3			Table 4		pa-m ³ /mol
4,4'-DDE, octanol-water partition coefficient ^e	log K _{ow}	6.76			Table 4	Identified as a sensitive input parameter in the final FWM	unitless
4,4'-DDE, Henry's law constant	H	2.13			Table 4		pa-m ³ /mol

^a Harbor-wide (RM 2 to 11.2) and Swan Island Lagoon input parameters were used in selection of a food web model. Where two values are presented in a cell the first is for RM 2-11, the second for Swan Island.

^b Not all FWM input parameters were considered in for model calibration. Where cells are blank, initial input parameters were used in the final model

^c Input based on site-specific data

^d Chemical parameters for COC other than Total PCB and 4,4'-DDE are also provided in Table B-4.

^e K_{ow} was identified as a sensitive input parameter for bioaccumulative COCs